

REMARKS

Claims 5, 8, 9, 11-16, 20 and 23 are all the claims pending in the application.

I. Response to Rejection of Claims 5, 8-9, 20 and 23 under 35 U.S.C. § 103(a)

Claims 5, 8-9, 20 and 23 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Terada et al. (WO 03/052045) in view of Namikawa et al. (WO 02/05975).

Applicants respectfully traverse the rejection.

Claim 5 is directed to a carrying member with a cleaning function, comprising a carrying member and a cleaning sheet comprising a support, a cleaning layer provided on one side of the support, an adhesive layer provided on the other side of the support, and a releasable protective film laminated directly on the cleaning layer, wherein the cleaning layer comprises a polyimide resin which is heat-resistant, and a releasable protective film laminated on the cleaning layer, wherein each of the relative intensities of the fragment ions of CH_3Si^+ , $\text{C}_3\text{H}_9\text{Si}^+$, $\text{C}_5\text{H}_{15}\text{Si}_2\text{O}^+$, $\text{C}_5\text{H}_{15}\text{Si}_3\text{O}_3^+$, $\text{C}_7\text{H}_{21}\text{Si}_3\text{O}_2^+$, CH_3SiO^- , $\text{CH}_3\text{SiO}_2^-$ and Si^+ in the cleaning layer, when the protective film is peeled off the cleaning layer, is 0.1 or less according to time-of-flight secondary ion mass spectrometry, relative to C_2H_3^+ in the case of positive ion or O^- in the case of negative ion, wherein the cleaning layer has a tensile modulus of 10 MPa or more as determined according to JIS K7127 and exhibits an adhesive strength of 0.2N/10 mm width or less when peeled off a silicon wafer at an angle of 180° as determined according to JIS Z0237, wherein the cleaning sheet is laminated on the carrying member through an adhesive layer, wherein the carrying member is a semiconductor wafer or base for a flat panel display, and wherein the releasable protective film is a polyolefin-based film comprising polyethylene, polypropylene, polybutene, polybutadiene or polymethylpentene.

Claim 8 is directed to a carrying member with a cleaning function, comprising a carrying member and a cleaning layer comprising a polyimide resin which is heat-resistant provided on

at least one side of the carrying member, wherein each of the relative intensities of the fragment ions of CH_3Si^+ , $\text{C}_3\text{H}_9\text{Si}^+$, $\text{C}_5\text{H}_{15}\text{Si}_2\text{O}^+$, $\text{C}_5\text{H}_{15}\text{Si}_3\text{O}_3^+$, $\text{C}_7\text{H}_{21}\text{Si}_3\text{O}_2^+$, CH_3SiO^- , $\text{CH}_3\text{SiO}_2^-$ and Si^+ in the cleaning layer is 0.1 or less according to time-of-flight secondary ion mass spectrometry, relative to C_2H_3^+ in the case of positive ion or O^- in the case of negative ion, wherein the cleaning layer has a tensile modulus of 10 MPa or more as determined according to JIS K7127 and exhibits an adhesive strength of 0.2N/10 mm width or less when peeled off a silicon wafer at an angle of 180° as determined according to JIS Z0237, wherein the carrying member is a semiconductor wafer or base for a flat panel display, and wherein a releasable protective film is laminated directly on the cleaning layer and the releasable protective film is a polyolefin-based film comprising polyethylene, polypropylene, polybutene, polybutadiene or polymethylpentene.

The Examiner acknowledges that Terada does not disclose that a cleaning layer that is a polyimide resin or the claimed relative intensities of the recited fragment ions.

Thus, the Examiner relies on Namikawa as teaching a cleaning layer made of polyimide. *See* page 5, line 19 to page 6, line 8. The Examiner asserts that it would have been obvious to one of ordinary skill in the art to have substituted the cleaning layer comprising (meth)acrylic acid of Terada with a cleaning layer comprising polyimide resin because the substitution of art recognized equivalents as shown by Namikawa is within the level of ordinary skill in the art. In addition, the Examiner asserts that the simple substitution of one known element for another would achieve the predictable result of providing an effective cleaning layer which causes no contamination on the conveying site. The Examiner further asserts that it would have been obvious to one of ordinary skill in the art to reasonably expect each of the relative intensities of the recited fragment ions in the cleaning layer, when the protective film is peeled off the cleaning layer, to be within those recited because Terada teaches that the amount of silicone attached to said cleaning layer when the separator is peeled off said cleaning layer is 0.005 g/m^2 or less, as

calculated in terms of polydimethylsiloxane. *See* page 6, line 19 to page 7, line 9 and page 8, lines 13 to page 10, line 21.

Applicants respectfully disagree and submit that one of ordinary skill in the art would not be motivated to modify Terada as proposed by the Examiner.

Terada discloses that a material which has cured by an activation energy source such as a ultraviolet rays and heat to have a three-dimensionally networked molecular structure that gives a lowered adhesion is preferably used as a cleaning layer. *See* page 19, line 24 to page 20, line 3. In addition, Terada discloses that the 180° peel adhesion is 0.20 N/10 mm or less, preferably from about 0.010 to 0.10 N/10 mm. *See* page 20, lines 3-6. Further, in the Examples, Terada uses an ultraviolet-curing adhesive containing an acrylic polymer as the cleaning layer.

Namikawa similarly discloses the use of a material of the cleaning layer as one that can be cured by the active energy source such as the ultraviolet ray, heat, etc. to change the molecular structure into three-dimensional net and to lower the adhesive force is preferable as such adhesive layer. *See* page 10, lines 3-6. Namikawa also discloses that the 180° releasing adhesive force is not more than 0.20 N/10 mm, preferably about 0.010 to 0.10 N/10 mm. *See* page 10, lines 7-9. As specific materials, Namikawa discloses the use of acrylic polymers that contain (meth)acrylic acid and/or (meth)acrylic ester. *See* page 11, lines 3-7. Furthermore, in the Examples, an ultraviolet-curing adhesive containing an acrylic polymer as the cleaning layer.

Thus, based on the teachings of Terada and the disclosure of Namikawa, it is submitted that one of ordinary skill in the art would not be motivated to modify the cleaning layer of Terada by using polyimide. That is, Terada discloses that the cleaning layer exhibit a 180° peel adhesion of 0.20 N/10 mm or less, preferably from about 0.010 to 0.10 N/10 mm; otherwise, the cleaning layer adheres to the non-cleaning area in the device during conveyance, possibly causing conveyance troubles. Similarly, Namikawa teaches the same problem and teaches the use of

materials, such as acrylic polymers on page 11.

Accordingly, it is submitted that there is no motivation for one of ordinary skill in the art to substitute the material used as the cleaning layer of Terada, and thus one of ordinary skill in the art would not arrive at the claimed invention.

In addition, Namikawa teaches various materials throughout the disclosure that can be used as the cleaning layer. However, the Examiner has failed to identify a reason to select polyimide from the various materials, particularly in view of the disclosure in Namikawa discussed above.

Further, since Terada does not disclose the use of polyimide and since Namikawa neither contains an Example where polyimide is used nor mentions silicone, it is submitted that one of ordinary skill in the art would not reasonably expect each of the relative intensities of the recited fragment ions in the cleaning layer to be within the claimed ranges.

For at least the foregoing reasons, it is respectfully submitted that a *prima facie* case of obviousness has not been established, and that claims 5 and 8 are patentable over the cited art.

In addition, claims 9, 20 and 23 depend from claim 5 or 8, and thus it is submitted that these claims are patentable for at least the same reasons as claim 5 or 8.

Accordingly, withdrawal of the rejection is respectfully requested.

II. Response to Nonstatutory Obviousness-type Double Patenting Rejection

Claims 5, 8-9, 20 and 23 are rejected on the ground of nonstatutory obviousness-type double patenting rejection over claim 14 of U.S. 7,575,790 in view of Namikawa.

Applicants respectfully traverse the rejection for the reasons set forth above in Section I.

Accordingly, withdrawal of the rejection is respectfully requested.

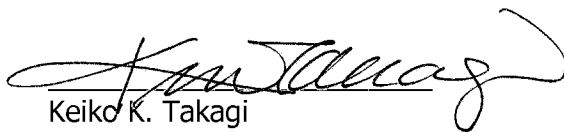
III. Conclusion

In view of the above, reconsideration and allowance of claims 5, 8, 9, 11-16, 20 and 23 is respectfully requested.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


Keiko K. Takagi
Registration No. 47,121

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON DC SUGHRUE/265550

65565

CUSTOMER NUMBER

Date: May 3, 2010